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THE TRAVELS OF THOMAS BARBOUR ON THE SHIP *UTOWANA* IN 1931 AND THE TAXONOMIC STATUS OF *ANOLIS UTOWANAE*

STEVEN POE

ABSTRACT. *Anolis utowanae* was described by Thomas Barbour in 1932 with an accompanying backstory reviewing the collection of the holotype and only specimen in detail. Subsequent workers have been unable to procure additional representatives of this species near the purported type locality of Mazatlán, Mexico, and it has remained a taxonomic enigma since its description. Here I show that *A. utowanae* is a junior synonym of *A. conspersus*, a species endemic to Grand Cayman in the West Indies. The type specimen appears to have been part of a series collected by Barbour on Grand Cayman during his 1931 trip from Miami to the Panama Canal and then North to Pacific Mexico, including Mazatlán, on the yacht named *Utowana*. How the specimen came to be associated with Mazatlán remains a mystery.

KEY WORDS: *Anolis utowanae*; Mexico; Grand Cayman; taxonomy; nomenclature; Thomas Barbour

> On a day last spring, April 10, 1931, while driving with Mrs. Barbour and my daughter, Mary, to a finca some miles north of Mazatlan, we stopped in a dusty lane to let a herd of calves pass by. The herd was followed by a barefooted Indian who trudged wearily behind them through the deep dust. He carried in his hand a long lashed whip and from time to time he snapped it viciously and in so doing killed the lizards on rocks or fence posts by his way with most extraordinary skill. We watched him some time quite fascinated. I asked him what on earth he was pocketing these lizards for. He looked at me with surprise and then added, "I am taking them home to feed my cats." I bought what he had for a few cents. It was obvious that he felt quite certain that he had been dealing with a person of unsound mind as he walked on looking at the coins, for it surely had never occurred to him that such small game had a cash value. Among these lizards one, I feel quite certain, is unknown.
>
> Barbour (1932), *On a new* Anolis *from western Mexico* (description of *Anolis utowanae*).

Museum of Southwestern Biology and Department of Biology, University of New Mexico, Albuquerque, New Mexico 87131, U.S.A.; e-mail: anolis@unm.edu.

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I am convinced that the important part of Thomas Barbour's story—that Barbour obtained a new species of lizard on an April day in 1931 near Mazatlán—is false. I experienced a creeping realization regarding the status of *Anolis utowanae* on the basis of personal experience collecting anoles in Mexico, reading Henderson and Powell (2004), and having discussions with colleagues more skeptical than I of the reliability of a Barbour account. Comparison of specimens and examination of historical accounts validated this concern. Below I present evidence that the name *A. utowanae* is a junior synonym.

HISTORY

As has been well chronicled by Henderson and Powell (2004) and Barbour himself (1943, 1945), Thomas Barbour and his family traveled extensively in the West Indies and Central America on the yacht named *Utowana* in the 1920s and 1930s. Henderson and Powell (2004) provided maps and/or itineraries for three of the four *Utowana* trips taken by Barbour during 1929–34 but offered only a brief summary of the 1931 trip, where Barbour presumably would have obtained the *A. utowanae* holotype specimen. Fortunately, Barbour (1945) and Barbour's daughter Mary (Barbour, 1932) recount this voyage in some detail.

Barbour left Miami on 30 January 1931 with daughter Mary, wife Rosamond, and yachtmaster Allison Armour. The group traveled to the Bahamas and Cuba before heading west to the mainland coast near Tela, Honduras, and thence south to the Panama Canal for traversal to the Pacific Ocean and the bulk of the voyage. Barbour (1945) does not mention Grand Cayman, but a visit to this island on 8 February was described by Mary Barbour (1932: 23–24). She recounted the collection of four lizards and a snake by her father. Harvard's Museum of Comparative Zoology (MCZ) possesses specimens of *Alsophis caymanus* from Grand Cayman with date of collection 10 February 1931 (MCZ 31499) from Barbour, and of *Anolis conspersus* from Grand Cayman with date of collection 8 February 1931 (MCZ 31500–31504). These five specimens represent all but one of Barbour's listed MCZ *Anolis* collections for 1931. The other is the holotype specimen of *A. utowanae* (MCZ 31035; Mary Barbour's diary notes on T. Barbour's collections mostly reflect what is present in the MCZ collections, but she is frequently off by one or two specimens; see additional comparisons below).

Their Pacific travels continued north to the Honduran Golfo de Fonseca and Guatemala before skirting Mexico up to the Gulf of California. This Pacific Mexico part of the trip was lovingly recounted by Barbour (1945:32) for its beauty, life experience, and outstanding bugling:

> I can close my eyes and see myself now, sitting on a rock beside Rosamond and Mary B. It was at Agua Grande on Carmen Island, where we rested a little while in the shade after a search for wild cotton plants. A tiny snake crawled out from under the rock we were perched upon and right at my feet. I could hardly believe my eyes, for it was something which I had long hoped to see in life. We sailed on northward as far as Santa Rosalia, and Ros and I still often recall the music of a bugle played by a Mexican soldier in the old fort overlooking the town. He was by all odds the best bugler we have ever heard anywhere. This visit to Lower California was the highlight of all our experiences on board the Utowana.

This snake observation is the only herpetological mention in Thomas Barbour's (1945) chronicle of the 1931 trip. In addition

to the *A. utowanae* holotype, two herpetological specimens were deposited in MCZ by Barbour with date of collection 10 April 1931 and locality Mazatlán (MCZ 31589: *Ctenosaura pectinata*; MCZ 31588: *Cnemidophorus hyperythrus*).

Mary Barbour (1932:100) gave an account of the acquisition of lizards on 11 April outside of Mazatlán that is strikingly similar to Thomas Barbour's (1932) description of the obtainment of *A. utowanae* purported to have occurred on 10 April:

> Saturday, April 11, 1931
> MAZATLAN, MEXICO. AT ANCHOR.
> Daddy woke us up early this morning, and he and Mother and I went ashore at 8:30. First we went to the market, and then took our car and motored way out into the country. We stopped at different fincas and bought some corn, eggplants, cabbages, tomatoes, and limes to take on board. While we were waiting for the limes to be picked, a man came down the lane driving a herd of cows. Suddenly we heard his whiplash crack and saw him pick up something on a rock near us. On asking him what it was he replied "Lizards for my cat!" He was flabbergasted when Daddy gave him 10 cents for them, and he told his friend who was standing near that Señor Americano must be crazy.

The Mary and Thomas Barbour accounts seem unlikely to be independent, as Thomas Barbour would have been familiar with Mary's account as he oversaw the publication of her diary. It is possible that Thomas Barbour (1932) took his treatment of the acquisition of *A. utowanae* directly from his daughter's pages, although I know of no direct evidence that this happened. Mary Barbour (1932) occasionally commented on collected specimens (e.g., p. 83: "Daddy found some *rare* lizards." my italics), but she did not mention that any unusual species was obtained from the cattle farmer in Mazatlán.

COMPARISONS

The type specimen of *A. utowanae* is nondescript, even for an anole. It is a subadult female, long preserved, with no strong markings save for elongate striations on the underside of the head (Fig. 1). I showed the specimen to an *Anolis*-knowledgeable undergraduate in my lab, who remarked that it "looks like every other anole." I concur broadly with this sentiment, but would narrow it to say that the specimen looks like every other female trunk crown *Anolis*. Numerous Northern Lesser Antillean and Greater Antillean species come to mind.

Herpetologists often rely heavily on locality and live male dewlap coloration for identification of anoles. When neither is available, identification can be difficult. I first used a new electronic key for anoles (Poe, in preparation) to narrow the choices. This key operates on the Lucid platform and allows comparison of attributes (color, scales, size, geography) scored for an unknown specimen to a database of attributes for all species of *Anolis*. Candidate species may be ranked on the basis of their degree of difference from the unknown specimen. This procedure reduced the possible species assignments for *A. utowanae* to a few Greater and Lesser Antillean forms. Mainland species generally were poor matches, and as realized by previous workers (e.g., Hardy and Mc Diarmid, 1969; Lieb, 2001), no Mexican species was similar. After narrowing the choices, I spent a day comparing the *A. utowanae* specimen with descriptions in pertinent literature (e.g., Underwood and Williams, 1959; Lazell, 1972; Schwartz and Henderson, 1991) and MCZ material with a focus on areas known to have been visited or near to areas visited by Barbour. Once

Figure 1. Undersides of heads showing characteristic striated markings in *Anolis conspersus* (left; MCZ 45042) and holotype specimen of *A. utowanae* (right).

convinced of the true species identity of the *A. utowanae* type specimen, I scored five individuals of this species of comparable size and sex for demonstrative comparison.

Characters scored were snout-to-vent length (SVL), height of the ear, length of head from anterior of the ear opening to tip of snout, width of head between postero-ventral corners of the jugals, femoral length from the longitudinal midline of the body laterally to the knee, length of fourth toe, length of tail, condition of nasal scale, number of superciliaries, minimum number of scales across the snout at the level of the second canthals, number of expanded lamellae under the fourth toe (counted in the manner of Williams *et al.* [1995]), minimum number of scales separating the supraorbital semicircles, minimum number of scales separating the interparietal and the supraorbital semicircles, number of scales in contact with the mental between the infralabials, number of scales in contact with the rostral between the supralabials, number of longi-

TABLE 1. SCALE COUNTS AND MEASUREMENTS FOR THE TYPE SPECIMEN OF *ANOLIS UTOWANAE* AND FIVE COMPARABLY SIZED FEMALE SPECIMENS OF *A. CONSPERSUS*.

Trait	*Anolis conspersus* Mean (Range)	*Anolis utowanae* MCZ 31035
SVL	41.7 (36.5–46.8)	39.6
Scales across the snout at second canthals	6.8 (6–7)	6
Lamellae on fourth toe	23.1 (22–25)	23/24
Scale rows separating supraorbital semicircles	0.8 (0–1)	1
Scales from interparietal to supraorbital semicircles	2.4 (2–3)	2
Postmentals	5.8 (5–6)	5
Postrostrals	8 (6–10)	9
Ear height/SVL	0.03 (0.02–0.03)	0.04
Head length/SVL	0.27 (0.26–0.28)	0.27
Head width/SVL	0.17 (0.16–0.17)	0.17
Femoral length/SVL	0.27 (0.26–0.28)	0.26
Toe length/SVL	0.19 (0.18–0.20)	0.18
Dorsal scales in 5% SVL	9.6 (8–11)	8
Ventral scales in 5% SVL	6.6 (5–8)	6
Supralabials to eye	6 (5–7)	7
Nasal	elongate, contacts rostral anterior to sulcus between rostral and first supralabial	elongate, contacts rostral anterior to sulcus between rostral and first supralabial
Interparietal length/SVL	0.03 (0.03–0.04)	0.03
Tail length/SVL	1.76 (1.51–1.94)	1.36
Superciliaries	1 (1)	1

Specimens examined *Anolis conspersus*: Museum of Comparative Zoology 31035, 45042, 87372, 87388, 87396, 174146.

tudinal dorsal scales in 5% of SVL, number of longitudinal ventral scales in 5% of SVL. Scoring for these characters follows Williams *et al.* (1995) and Poe (2004).

RESULTS

Character states of the holotype of *A. utowanae* fall within the range of scores for *A. conspersus* (Table 1). This species further possesses the distinctive chin striations of *A. utowanae* (Fig. 1), which nevertheless are not unique to *A. conspersus*, even among trunk-crown anoles (pers. obs.). Perhaps equally compelling, this result makes sense in light of Barbour's activities and MCZ accessions of the time. Barbour's only West Indian collections of 1931 are from Grand Cayman, and his only anole specimens are *A. conspersus*.

I cannot determine whether Barbour's specimens, including *A. utowanae*, are *A. conspersus conspersus* (from western Grand Cayman) or *A. conspersus lewisi* (from eastern Grand Cayman); the locality for the specimens is simply "Grand Cayman," and the two subspecies are separated on the basis of color. *Anolis conspersus conspersus* may be more likely, as Mary Barbour's treatment (1932:24) suggests that the specimens were collected on an excursion to the west. If future workers suggest species status for the eastern Grand Cayman *conspersus* and if Barbour's specimens are determined to be *A. c. lewisi*, it is noteworthy that the name *A. utowanae* (Barbour, 1932) predates Grant's

A. c. lewisi (Grant, 1941). That is, the proper name for eastern Grand Cayman *Anolis* would then be *A. utowanae* rather than *A. lewisi*. Those who recognize subspecies would call the eastern form *A. conspersus utowanae*.

DISCUSSION

Several authors have included *A. utowanae* in species lists without comment (e.g., Enderson *et al.*, 2009), and a few have discussed the taxonomic affinities of *A. utowanae*. Barbour (1932) in the original description noted similarity to *A. baccatus*, which was deemed a synonym of *A. carolinensis* by Kohler (2011). Thus Barbour (1932) unwittingly associated *A. utowanae* with a species outside of Mexico that shares some potentially convergent features with *A. conspersus* (they are both "trunk-crown" species). Smith (1939) suggested close relationship with *A. schmidti* (= *nebulosus*; Nieto-Montes de Oca *et al.*, 2013), and the final couplet regarding *A. utowanae* in the lizard key of Smith and Taylor (1950) separates *A. utowanae* from *A. cymbops* (a *schiedii* group *Anolis*). Stuart (1955) stated that *A. utowanae* should be viewed "with suspicion" because it was known from a single specimen from a well-studied region. This statement was perhaps the first inkling of the questionable status of *A. utowanae*. Etheridge (1959) X-rayed *A. utowanae* and placed it in his *chrysolepis* series on the basis of its possession of caudal transverse processes, a V-shaped parietal crest, 24 presacral vertebrae, and an inscriptional rib formula of 2:2. This series inference is not unreasonable considering the geography, as the traits of *A. utowanae* are also found in some Caribbean Beta anoles (Etheridge, 1959). Also, there is more variation within series than Etheridge was aware of in 1959, and known *A. conspersus* were not included in his study. Hardy and McDiarmid (1969) apparently examined the holotype of *A. utowanae* and noted its distinctness relative to other Sinaloan anoles. Lieb (2001:53) stated that *A. utowanae* was a junior synonym but did not specify of what.

The taxonomic assignment of the *A. utowanae* type specimen adds to the growing refinement of Mexican anole taxonomy (Lieb, 2001; Kohler, 2012; Nieto-Montes de Oca *et al.*, 2013). Although much work remains to be done, progress is underway and several additional issues are likely to be cleared up in the near future.

Two questions remain unanswered regarding *A. utowanae*. First, how did the proper identification of *A. utowanae* elude the careful workers on anoles post-Barbour? In particular, how did ultimate anole expert Ernest Williams not recognize *A. utowanae* as *A. conspersus* when he had coauthored with Underwood (Underwood and Williams 1959) the seminal contribution on Jamaican anoles (the lineage from which *A. conspersus* evolved), was undoubtedly familiar with Barbour's travels given their shared history as curators of herpetology at the MCZ, and had the pertinent type specimen and comparative material readily available to him in the MCZ herpetology collection for decades? The answer may be that Mexico was the one area of *Anolis* in which Williams lacked confidence; he relied heavily on Carl Lieb for Mexican anole information, frequently sending him material for identification (pers. comm. from Williams 1992). Lieb conversely worked almost exclusively in Mexico so there was no reason for him to be familiar with the distantly related West Indian forms.

Second, what really happened with Barbour's "Indian" story? The detail in the tale encourages acceptance of its veracity. This degree of detail likely contributed to willingness to entertain the possibility of the validity of this species in the face of multiple failed

collecting attempts at the type locality (by, e.g., my group in 2011) and gradual appreciation of the aberrance of the specimen in Sinaloa (Hardy and McDiarmid, 1969). The *A. utowanae* specimen apparently is part of the series of *A. conspersus* collected by Barbour (MCZ 31500–31504), so how did one of these specimens get attributed to a lizard-killing cat owner in Mazatlán?

If Barbour were the only storyteller, it might be tempting to consider the acquisition story a complete fabrication. Thomas Barbour's contributions to herpetology and MCZ collections are great, but his taxonomic work has escaped celebration for meticulous accuracy. Some of the colleagues with whom I discussed the case of *utowanae* seemed to attribute the confusion simply to Barbour being Barbour. Note, for example, that Barbour and his wife disagreed on the identity of the person who lanced some parasites out of another passenger during the 1931 trip, with Barbour claiming it was he and Mrs. Barbour vehemently arguing otherwise (Barbour 1945:124). A disagreement between married persons on the minutiae of a temporally distant event is not unusual, so I'm told. But here we have an argument about what would seem to be a memorable aspect of a major happening. The analogy is obvious and unavoidable: if Barbour was capable of confusing himself with someone who performed a minor surgery during an emergent situation at sea, it does not seem so unrealistic that he could misremember when or how he obtained a lizard.

But there is no reason to doubt Mary Barbour's (1932) account. She seems to have been recording events more or less as they happened, and her dates of trip milestones approximately correspond to those given by Barbour (1945; although again, these accounts cannot be considered independent). The lizard collections mentioned by Mary Barbour in her diary correspond to specimens, localities, and collection dates listed in the MCZ catalog. Mary Barbour noted collection of lizards on 11 February (Grand Cayman; "four lizards", i.e., the *A. conspersus*), 31 March (La Paz, Lower California; "some rare lizards"), 1 April (Espiritu Santo Island; "a lot of lizards"), 2 April (San Francisco Island; "some fine lizards"), 3 April (Agua Verde; "2 kinds of lizards"), 4 April (Agua Grande; "caught lizards by stunning them with stones"), 6 April (San Marcos Island; "5 lizards"), 11 April (Mazatlán; "Lizards for my cat", i.e., the purported *utowanae* acquisition). The MCZ catalog lists dates of collection for Barbour's 1931 lizard material as 8 February (Grand Cayman; five *A. conspersus*), 1 April (Isla Gallina; 11 *Phyllodactylus*, four *Urosaurus*), 2 April (Isla San Francisco; one *Phyllodactylus*, four *Sauromalus*, three *Uta*), 3 April (Agua Grande; two *Cnemidophorus*, two *Uta*. Puerto Escondido; one *Uta*. Agua Verde; two *Urosaurus*), 6 April (Isla San Marcos; two *Cnemidophorus*, four *Urosaurus*), 10 April (Mazatlán; one *Cnemidophorus*, one *Ctenosaura*, *A. utowanae*), 23 April (Chiriqui, Panama; one *Ctenosaura*). Minor differences in details aside (e.g., number of specimens collected, specific dates of collection for contiguous mainland localities), Mary Barbour's diary appears to be an accurate chronicle of the collections of Thomas Barbour during the 1931 trip on the ship *Utowana*.

Given the apparent reliability of Mary Barbour's account, it seems likely that the meeting with the cattle farmer did actually occur around 11 April 1931 near Mazatlán and that lizards were procured at that time. Notably, Mary Barbour (1932:100) mentioned observing just one instance of lizard collection by the cattle farmer: "Suddenly we heard his whiplash crack and saw him pick up something on a rock near us." Barbour (1932:11), possibly embellishing, implied

multiple whippings that resulted in dead lizards: "from time to time he snapped it viciously and in so doing killed the lizards on rocks or fence posts." The specimens obtained from the cattle farmer may have been a whiptail (MCZ 31588) and a ctenosaur (MCZ 31589). No other Barbour collections around 10–11 April are listed in the MCZ catalog or by Mary Barbour (1932), and these are the only specimens of the trip purportedly from near Mazatlán (besides the *A. utowanae* holotype). One of these specimens, the ctenosaur, seems too large to have been killed in the manner described (the ctenosaur specimen is mangled; the whiptail specimen is pristine; personal communication from Jonathan Losos). Perhaps the whiptail specimen is the lizard killed in Mary Barbour's (1932) account.

If the Mazatlán lizard vignette occurred as chronicled in Mary Barbour's diary, and *A. utowanae* (= *conspersus*) was collected on the same trip but much earlier on Grand Cayman, it seems likely that Thomas Barbour simply misplaced his specimens such that a Grand Cayman lizard ended up among lizards from Western Mexico. Mary Barbour noted four lizards collected on Grand Cayman, the MCZ catalog (i.e., Thomas Barbour) records five, and actually there were six. Mary Barbour's underestimate of the number of Grand Cayman lizards collected may have influenced Barbour's interpretation of the six anoles caught on this trip, but we can only speculate how this influence could have prompted the erroneous assignment of the *utowanae* specimen to Mazatlán.

I would prefer an ending with more closure, but this conclusion of an unexplained specimen mixup is as far as current evidence can take us. How Barbour could cull one of a series of collected *A. conspersus*—a series for which he apparently accurately chronicled identity, locality, and (approximately) date—and imagine a role for this specimen in a colorful, true collection story that took place on the other side of the continent 2 months later remains a mystery.

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